SAF-RC-075
100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0404 SAF-RC-075

Waste Site: 100-D-50:8

Date: 27 August 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Subsite 100-D-50:8
Subject: Inorganics - Data Package No. JP0404-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0404 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PX15	7/31/12	Soil	C	See note 1
J1PX16	7/31/12	Soil	C	See note 1
J1PX17	7/31/12	Soil	C	See note 1
J1PX18	7/31/12	Soil	C	See note 1
J1PX19	7/31/12	Soil	C	See note 1
J1PX20	7/31/12	Soil	C	See note 1
J1PX21	7/31/12	Soil	C	See note 1

1 - ICP metals (6010B) and mercury by 7471A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the zinc result in sample J1PX21 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1PX21) was submitted for analysis. Thirteen analytes were detected in the field blank. Under the WCH statement of work, no qualification is required.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (56%) and silicon (11%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (26%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

- All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. JP0404 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the zinc result in sample J1PX21 was qualified as undetected and flagged "UJ".
- Due to matrix spike recoveries outside QC limits, all antimony (56%) and silicon (11%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (26%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0404	**REVIEWER: ELR**	**Project: 100-D-50:8**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery
Zinc	UJ	J1PX21	Method blank contamination

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: J1PX15

Lab Sample ID: 280-31717-1
Client Matrix: Solid

% Moisture: 1.0

Date Sampled: 07/31/2012 1320
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1534
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

V 8/24/12

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6230	X	1.4	4.6
Antimony		0.59	J	0.35	0.55
Arsenic		1.3		0.61	0.92
Barium		62.7	X	0.070	0.46
Beryllium		0.030	U	0.030	0.18
Boron		1.2	B	0.90	1.8
Cadmium		0.13	B	0.038	0.18
Calcium		7820	X	12.9	45.9
Chromium		7.3	X	0.053	0.18
Cobalt		8.5	X	0.092	0.92
Copper		18.5	X	0.20	0.92
Iron		22700	X	3.5	4.6
Lead		9.6		0.25	0.46
Magnesium		4320	X	3.4	18.4
Manganese		306	X	0.092	0.92
Molybdenum		0.40	B M	0.24	1.8
Nickel		10.0	X	0.11	3.7
Potassium		903		37.6	275
Selenium		0.79	U	0.79	0.92
Silicon		506	N X J	5.2	9.2
Silver		0.15	U	0.15	0.18
Sodium		345		54.2	110
Vanadium		60.3	X	0.086	1.8
Zinc		44.0	X	0.37	0.92

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1859
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.57 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.030		0.0059	0.018

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: J1PX16

Lab Sample ID: 280-31717-2
Client Matrix: Solid

% Moisture: 1.9

Date Sampled: 07/31/2012 1325
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1544
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

VM 8/24/12

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6600	X	1.5	4.7
Antimony		0.36	U J	0.36	0.57
Arsenic		1.6		0.62	0.94
Barium		61.4	X	0.072	0.47
Beryllium		0.10	B	0.031	0.19
Boron		1.3	B	0.92	1.9
Cadmium		0.13	B	0.039	0.19
Calcium		6480	X	13.3	47.2
Chromium		9.3	X	0.055	0.19
Cobalt		7.5	X	0.094	0.94
Copper		17.3	X	0.20	0.94
Iron		19500	X	3.6	4.7
Lead		4.8		0.25	0.47
Magnesium		4180	X	3.5	18.9
Manganese		291	X	0.094	0.94
Molybdenum		0.60	B	0.25	1.9
Nickel		10.5	X	0.12	3.8
Potassium		1120		38.7	283
Selenium		0.81	U	0.81	0.94
Silicon		501	X J	5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		265		55.7	113
Vanadium		49.7	X	0.089	1.9
Zinc		39.0	X	0.38	0.94

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1901
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.62 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.012	B	0.0055	0.017

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: J1PX17

Lab Sample ID: 280-31717-3
Client Matrix: Solid

% Moisture: 0.9

Date Sampled: 07/31/2012 1335
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1547
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 100 mL

V 8/22/12

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5900	X	1.4	4.5
Antimony		0.34	U J	0.34	0.54
Arsenic		1.5		0.59	0.89
Barium		52.1	X	0.068	0.45
Beryllium		0.029	B	0.029	0.18
Boron		0.88	U	0.88	1.8
Cadmium		0.11	B	0.037	0.18
Calcium		7270	X	12.6	44.7
Chromium		8.1	X	0.052	0.18
Cobalt		8.2	X	0.089	0.89
Copper		17.2	X	0.19	0.89
Iron		21300	X	3.4	4.5
Lead		3.4		0.24	0.45
Magnesium		4390	X	3.3	17.9
Manganese		286	X	0.089	0.89
Molybdenum		0.23	U	0.23	1.8
Nickel		10.5	X	0.11	3.6
Potassium		837		36.6	268
Selenium		0.77	U	0.77	0.89
Silicon		535	X J	5.1	8.9
Silver		0.14	U	0.14	0.18
Sodium		286		52.7	107
Vanadium		57.5	X	0.084	1.8
Zinc		38.7	X	0.36	0.89

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1903
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.64 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.032		0.0052	0.016

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: **J1PX18**

Lab Sample ID: 280-31717-4
Client Matrix: Solid

% Moisture: 1.2

Date Sampled: 07/31/2012 1340
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1550
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

V 8/24/12

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6400	X	1.6	5.1
Antimony		0.38	U J	0.38	0.61
Arsenic		1.3		0.67	1.0
Barium		65.0	X	0.077	0.51
Beryllium		0.084	B	0.033	0.20
Boron		0.99	U	0.99	2.0
Cadmium		0.12	B	0.041	0.20
Calcium		6280	X	14.3	50.6
Chromium		8.2	X	0.059	0.20
Cobalt		8.2	X	0.10	1.0
Copper		16.8	X	0.22	1.0
Iron		20900	X	3.8	5.1
Lead		4.1		0.27	0.51
Magnesium		4430	X	3.7	20.2
Manganese		324	X	0.10	1.0
Molybdenum		0.43	B	0.26	2.0
Nickel		12.4	X	0.12	4.0
Potassium		1020		41.5	304
Selenium		0.87	U	0.87	1.0
Silicon		549	X J	5.7	10.1
Silver		0.16	U	0.16	0.20
Sodium		284		59.7	121
Vanadium		52.6	X	0.095	2.0
Zinc		39.3	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1906
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.69 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.011	B	0.0049	0.015

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: **J1PX19**

Lab Sample ID: 280-31717-5
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 07/31/2012 1355
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1552
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

8/24/12

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.03 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6650	X	1.5	4.9
Antimony		0.37	B J	0.37	0.59
Arsenic		1.7		0.65	0.99
Barium		59.5	X	0.075	0.49
Beryllium		0.11	B	0.033	0.20
Boron		0.97	U	0.97	2.0
Cadmium		0.13	B	0.040	0.20
Calcium		6930	X	13.9	49.3
Chromium		10.6	X	0.057	0.20
Cobalt		7.1	X	0.099	0.99
Copper		17.4	X	0.21	0.99
Iron		18300	X	3.7	4.9
Lead		3.4		0.27	0.49
Magnesium		4200	X	3.7	19.7
Manganese		269	X	0.099	0.99
Molybdenum		0.38	B	0.26	2.0
Nickel		11.1	X	0.12	3.9
Potassium		943		40.5	296
Selenium		0.85	U	0.85	0.99
Silicon		419	X J	5.6	9.9
Silver		0.16	U	0.16	0.20
Sodium		266		58.2	118
Vanadium		47.8	X	0.093	2.0
Zinc		36.3	X	0.39	0.99

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1908
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.66 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.031		0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: J1PX20

Lab Sample ID: 280-31717-6
Client Matrix: Solid

% Moisture: 0.5

Date Sampled: 07/31/2012 1235
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1514
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

8/26/12

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7310	X	1.4	4.7
Antimony		0.35	U J	0.35	0.56
Arsenic		1.5		0.61	0.93
Barium		65.8	X	0.071	0.47
Beryllium		0.11	B	0.031	0.19
Boron		1.6	B	0.91	1.9
Cadmium		0.14	B	0.038	0.19
Calcium		5340	X	13.1	46.5
Chromium		10.1	X	0.054	0.19
Cobalt		7.5	X	0.093	0.93
Copper		15.9	X	0.20	0.93
Iron		20700	X	3.5	4.7
Lead		4.6		0.25	0.47
Magnesium		4220	X	3.4	18.6
Manganese		303	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Nickel		10.6	X	0.11	3.7
Potassium		1340		38.2	279
Selenium		0.80	U	0.80	0.93
Silicon		639	X J	5.3	9.3
Silver		0.15	U	0.15	0.19
Sodium		279		54.9	112
Vanadium		50.6	X	0.088	1.9
Zinc		41.2	X	0.37	0.93

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1910
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.69 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0079	B	0.0048	0.015

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Client Sample ID: J1PX21

Lab Sample ID: 280-31717-7
Client Matrix: Solid

% Moisture: 0.0

Date Sampled: 07/31/2012 1350
Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 08/07/2012 1517
Prep Date: 08/06/2012 0745

Analysis Batch: 280-131612
Prep Batch: 280-130761

Instrument ID: MT_026
Lab File ID: 26a080712.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		216	X	1.4	4.6
Antimony		0.35	U J	0.35	0.56
Arsenic		0.61	U	0.61	0.93
Barium		2.2	X	0.070	0.46
Beryllium		0.042	B	0.031	0.19
Boron		0.91	U	0.91	1.9
Cadmium		0.038	U	0.038	0.19
Calcium		39.6	B X	13.1	46.3
Chromium		0.12	B X	0.054	0.19
Cobalt		0.12	B X	0.093	0.93
Copper		0.20	U X	0.20	0.93
Iron		273	X	3.5	4.6
Lead		0.50		0.25	0.46
Magnesium		22.8	X	3.4	18.5
Manganese		6.8	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Nickel		0.11	U X	0.11	3.7
Potassium		47.6	B	38.0	278
Selenium		0.80	U	0.80	0.93
Silicon		176	X J	5.2	9.3
Silver		0.15	U	0.15	0.19
Sodium		54.6	U	54.6	111
Vanadium		0.17	B X	0.087	1.9
Zinc		1.2	X C UJ	0.37	0.93

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 08/03/2012 1917
Prep Date: 08/03/2012 1155

Analysis Batch: 280-131210
Prep Batch: 280-130819

Instrument ID: MT_033
Lab File ID: 120803aa.txt
Initial Weight/Volume: 0.58 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0057	U	0.0057	0.018

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-31717-1

SDG #: JP0404
SAF#: RC-075

Date SDG Closed: August 2, 2012
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1PX15	280-31718-1	6010/7471	6010B/7471A
J1PX16	280-31718-2	6010/7471	6010B/7471A
J1PX17	280-31718-3	6010/7471	6010B/7471A
J1PX18	280-31718-4	6010/7471	6010B/7471A
J1PX19	280-31718-5	6010/7471	6010B/7471A
J1PX20	280-31718-6	6010/7471	6010B/7471A
J1PX21	280-31718-7	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 8/2/2012 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.7° C.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-130761 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium and Zinc are present in the method blank associated with batch 280-130761. Because the concentrations in the method blank are not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PX15; therefore, control limits are not applicable.

Silicon was recovered outside the control limits in the Matrix Spike performed on sample J1PX15, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1PX15 exhibited RPD data outside the control limits for Molybdenum, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

A low level of Selenium was present in the instrument blank associated with batch 280-130761. The concentration in the instrument blank was present at a level greater than half the reporting limit but all of the samples were non-detect, corrective action is deemed unnecessary.

No other anomalies were encountered.

4-7 8/2/12 @ CREP

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-313 | Page 5 of 6

Collector	H. Weber
Company Contact	J Kessner
Telephone No.	509-375-4688
Project Coordinator	KESSNER, JH
Price Code	8L
Data Turnaround	~~21~~ 7 Days (7/31/12)
Project Designation	100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot
Sampling Location	100-D-50:8 Verification
SAF No.	RC-075
Ice Chest No.	RCC-08-022
Field Logbook No.	EL-1607-14
COA	R00D502000
Method of Shipment	FedEx
Shipped To	TestAmerica Incorporated, ~~Richland~~ Denver (7/31/12)
Offsite Property No.	A 110 448
Bill of Lading/Air Bill No.	See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	None	None
Type of Container	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1
Volume	120mL	120mL	120mL	120mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	Nickel-63; Strontium-89,90 - Total	Isotopic Uranium

Sample No.	Matrix *	Sample Date	Sample Time	See item (1)	Chromium Hex	Nickel-63/Sr	Isotopic Uranium
J1PX15	SOIL	7/31/12	1320	X			
J1PX16	SOIL	7/31/12	1325	X			
J1PX17	SOIL	7/31/12	1335	X			
J1PX18	SOIL	7/31/12	1340	X			
J1PX19	SOIL	7/31/12	1355	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [signature]	7-31-12 1410	WCH [signature] MS Hancock	7/31/12 1410
WCH [signature] MS Hancock	7/31/12 1550	1060#1 A. Freier [signature]	7-31-12 1550
WCH 1060#1 A. Freier [signature]	8-1-12 1200	Fed Ex	
		[signature]	8/2/12 900

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

JP0404

REVIEWED BY [signature] DATE 8/1/12

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

20

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-075-313	Page 6 of 6
Collector H. Weber	Company Contact J Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code 8L	Data Turnaround ON 7/31/12 21 Days 7
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-50:8 Verification		SAF No. RC-075		
Ice Chest No. RCC-08-022	Field Logbook No. EL-1607-14	COA R00D502000	Method of Shipment FedEx		
Shipped To TestAmerica Incorporated, ~~Richland~~ Denver 7/31/12	Offsite Property No. A 110448		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	120mL	120mL	120mL	120mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	Nickel-63 Strontium-89,90 Total Sr	Isotopic Uranium							
21											

Sample No.	Matrix *	Sample Date	Sample Time									
J1PX20	SOIL	7/31/12	1285	X	X							
J1PX21	SOIL	7/31/12	1350	X	X							

Page 35 of 37

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / Heather Weber	7.31.12 1440	WCH	1410
Relinquished By/Removed From WCH	Date/Time 1550	Received By/Stored In MStankovich	7/31/12
MStankovich	7/31/12	1060#1	1550
Relinquished By/Removed From WCH	Date/Time 1060#1	A. Freier A. Freier	7-31-12
A. Freier A. Freier	8-1-12 1200	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
			8/2/12 900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY DWShea DATE 8/1/12

JP0404

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-50:8			DATA PACKAGE: JP0404		
VALIDATOR: ELR		LAB: TAL		DATE: 8/24/12	
			SDG: JP0404		

ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX
JIPX15 JIPX16 JIPX17 JIPX18 JIPX19
JIPX20 JIP2X1
soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... Yes (No) N/A
Field blanks analyzed? (Levels C, D, E) ..... (Yes) No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: Zinc - 27 - U5

FB - 13 detects

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... Yes (No) N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)

Comments: Silicon - 267o - J all (LCS)
MS- antimony (56%) (silicon - 117o - J all

no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? .... **Yes** No N/A

Duplicate results acceptable? .... **Yes** No N/A

MS/MSD standards NIST traceable? (Levels D, E) .... Yes No **N/A**

MS/MSD standards expired? (Levels D, E) .... Yes No **N/A**

Field duplicate RPD values acceptable? .... Yes No **N/A**

Field split RPD values acceptable? .... Yes No **N/A**

Transcription/calculation errors? (Levels D, E) .... Yes No **N/A**

Comments: __________

HHLO 8/ … [illegible]

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? .... Yes No **N/A**

ICP serial dilution %D values acceptable? .... Yes No **N/A**

ICP post digestion spike required? .... Yes No **N/A**

ICP post digestion spike values acceptable? .... Yes No **N/A**

Standards traceable? .... Yes No **N/A**

Standards expired? .... Yes No **N/A**

Transcription/calculation errors? .... Yes No **N/A**

Comments: __________

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Method Blank - Batch: 280-130761

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-130761/1-A	Analysis Batch:	280-131612	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-130761	Lab File ID:	26a080712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	08/07/2012 1530	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	08/06/2012 0745				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.0900	B	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	3.8	U	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.403	B	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Lab Control Sample - Batch: 280-130761

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-130761/2-A	Analysis Batch:	280-131612	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-130761	Lab File ID:	26a080712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	08/07/2012 1532	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	08/06/2012 0745				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	189.0	95	82 - 116	
Antimony	50.0	49.91	100	82 - 110	
Arsenic	100	94.92	95	85 - 110	
Barium	200	199.5	100	87 - 112	
Beryllium	5.00	4.96	99	84 - 114	
Boron	100	96.13	96	81 - 110	
Cadmium	10.0	9.77	98	87 - 110	
Calcium	5000	4915	98	82 - 114	
Chromium	20.0	19.42	97	84 - 114	
Cobalt	50.0	47.86	96	87 - 110	
Copper	25.0	23.14	93	88 - 110	
Iron	100	99.24	99	87 - 120	
Lead	50.0	47.98	96	86 - 110	
Magnesium	5000	4678	94	90 - 110	
Manganese	50.0	48.06	96	88 - 110	
Molybdenum	100	97.63	98	86 - 110	
Nickel	50.0	47.30	95	87 - 110	
Potassium	5000	4866	97	89 - 110	
Selenium	200	188.6	94	83 - 110	
Silicon	1000	261.3	26	10 - 70	
Silver	5.00	4.89	98	87 - 114	
Sodium	5000	5065	101	90 - 112	
Vanadium	50.0	49.43	99	88 - 110	
Zinc	50.0	46.91	94	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Matrix Spike - Batch: 280-130761

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-31717-1	Analysis Batch:	280-131612	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-130761	Lab File ID:	26a080712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.12 g
Analysis Date:	08/07/2012 1542	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	08/06/2012 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	6230		180	8396	1200	50 - 200	4
Antimony	0.59		45.1	25.99	56	20 - 200	
Arsenic	1.3		90.2	79.04	86	76 - 111	
Barium	62.7		180	232.4	94	52 - 159	
Beryllium	0.030	U	4.51	4.06	90	72 - 105	
Boron	1.2	B	90.2	75.80	83	75 - 107	
Cadmium	0.13	B	9.02	8.10	88	40 - 130	
Calcium	7820		4510	13190	119	43 - 165	
Chromium	7.3		18.0	24.80	97	70 - 200	
Cobalt	8.5		45.1	46.44	84	72 - 106	
Copper	18.5		22.5	36.93	82	37 - 187	
Iron	22700		90.2	23450	874	70 - 200	4
Lead	9.6		45.1	45.82	80	70 - 200	
Magnesium	4320		4510	8590	95	64 - 145	
Manganese	306		45.1	365.9	132	40 - 200	4
Molybdenum	0.40	B	90.2	76.33	84	75 - 103	
Nickel	10.0		45.1	47.56	83	61 - 126	
Potassium	903		4510	5203	95	56 - 172	
Selenium	0.79	U	180	150.9	84	76 - 104	
Silicon	506		902	603.9	11	20 - 200	N
Silver	0.15	U	4.51	4.09	91	75 - 141	
Sodium	345		4510	4713	97	78 - 111	
Vanadium	60.3		45.1	105.0	99	50 - 169	
Zinc	44.0		45.1	82.76	86	70 - 200	

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Duplicate - Batch: 280-130761

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-31717-1	Analysis Batch:	280-131612	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-130761	Lab File ID:	26a080712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.17 g
Analysis Date:	08/07/2012 1539	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	08/06/2012 0745				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	6230		6641	6	40	
Antimony	0.59		0.33	NC	40	U
Arsenic	1.3		1.25	7	30	
Barium	62.7		73.04	15	30	
Beryllium	0.030	U	0.0509	NC	30	B
Boron	1.2	B	1.24	0.7	30	B
Cadmium	0.13	B	0.139	3	30	B
Calcium	7820		7838	0.2	30	
Chromium	7.3		8.97	20	40	
Cobalt	8.5		8.21	3	30	
Copper	18.5		18.15	2	30	
Iron	22700		22270	2	40	
Lead	9.6		11.35	17	40	
Magnesium	4320		4505	4	30	
Manganese	306		321.9	5	40	
Molybdenum	0.40	B	0.544	31	30	B M
Nickel	10.0		10.75	7	30	
Potassium	903		971.7	7	40	
Selenium	0.79	U	0.74	NC	30	U
Silicon	506		519.7	3	40	
Silver	0.15	U	0.14	NC	30	U
Sodium	345		328.6	5	30	
Vanadium	60.3		59.09	2	30	
Zinc	44.0		44.21	0.4	40	

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Method Blank - Batch: 280-130819

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-130819/1-A	Analysis Batch:	280-131210	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-130819	Lab File ID:	120803aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	08/03/2012 1849	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	08/03/2012 1155				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-130819

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-130819/2-A	Analysis Batch:	280-131210	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-130819	Lab File ID:	120803aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	08/03/2012 1852	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	08/03/2012 1155				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.418	100	87 - 111	

Matrix Spike - Batch: 280-130819

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-31717-6	Analysis Batch:	280-131210	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-130819	Lab File ID:	120803aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.67 g
Analysis Date:	08/03/2012 1915	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	08/03/2012 1155				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0079	B	0.375	0.380	99	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-31717-1
Sdg Number: JP0404

Duplicate - Batch: 280-130819

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-31717-6	Analysis Batch:	280-131210	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-130819	Lab File ID:	120803aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.68 g
Analysis Date:	08/03/2012 1912	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	08/03/2012 1155				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0079	B	0.00725	9	20	B

Date: 27 August 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Subsite 100-D-50:8
Subject: Radiochemistry - Data Package No. JP0404-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0404 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PX15	7/31/12	Soil	C	See note 1
J1PX16	7/31/12	Soil	C	See note 1
J1PX17	7/31/12	Soil	C	See note 1
J1PX18	7/31/12	Soil	C	See note 1
J1PX19	7/31/12	Soil	C	See note 1
J1PX20	7/31/12	Soil	C	See note 1

1 – Alpha spectroscopy and total strontium.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

· Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All laboratory blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of an LCS analysis, all uranium-235 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Laboratory Duplicates

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity

(concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0404 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

- Due to the lack of an LCS analysis, all uranium-235 results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services.*

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISRTY DATA QUALIFICATION SUMMARY*

SDG: JP0404	REVIEWER: ELR	Project: 100-D-50:8	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Uranium-235	J	All	No LCS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Date: 08-Aug-12

Sample Results Summary

TestAmerica TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 52621

8/26/12

SDG No: JP0404

Batch / Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
2215048 UISO_IE_PLATE_AEA								
J1PX15								
MVXRE1AC	U-234	1.58E-01 +- 1.0E-01		pCi/g	84%	9.50E-02	1.00E+00	
	U-235	2.53E-02 +- 4.0E-02	U J	pCi/g	84%	6.73E-02	1.00E+00	
	U-238	1.48E-01 +- 9.7E-02		pCi/g	84%	8.33E-02	1.00E+00	
J1PX15 DUP								
MVXRE1AH	U-234	3.74E-01 +- 1.5E-01		pCi/g	98%	6.12E-02	1.00E+00	81.4
	U-235	-2.29E-03 +- 2.3E-02	U	pCi/g	98%	5.49E-02	1.00E+00	239.9
	U-238	3.62E-01 +- 1.4E-01		pCi/g	98%	6.30E-02	1.00E+00	84.2
J1PX16								
MVXRF1AC	U-234	2.38E-01 +- 1.2E-01		pCi/g	82%	5.78E-02	1.00E+00	
	U-235	1.21E-02 +- 2.5E-02	U J	pCi/g	82%	4.60E-02	1.00E+00	
	U-238	2.77E-01 +- 1.3E-01		pCi/g	82%	4.60E-02	1.00E+00	
J1PX17								
MVXRG1AC	U-234	1.50E-01 +- 9.6E-02		pCi/g	88%	6.67E-02	1.00E+00	
	U-235	-1.12E-03 +- 2.8E-02	U J	pCi/g	88%	5.60E-02	1.00E+00	
	U-238	2.05E-01 +- 1.1E-01		pCi/g	88%	7.20E-02	1.00E+00	
J1PX18								
MVXRH1AC	U-234	1.38E-01 +- 8.3E-02		pCi/g	100%	4.21E-02	1.00E+00	
	U-235	-9.25E-04 +- 2.3E-02	U J	pCi/g	100%	4.65E-02	1.00E+00	
	U-238	9.20E-02 +- 6.7E-02		pCi/g	100%	4.21E-02	1.00E+00	
J1PX19								
MVXRL1AC	U-234	1.16E-01 +- 7.7E-02		pCi/g	97%	4.72E-02	1.00E+00	
	U-235	1.03E-02 +- 2.4E-02	U J	pCi/g	97%	5.06E-02	1.00E+00	
	U-238	2.31E-01 +- 1.1E-01		pCi/g	97%	6.06E-02	1.00E+00	
J1PX20								
MVXRN1AC	U-234	2.34E-01 +- 1.2E-01		pCi/g	93%	6.00E-02	1.00E+00	
	U-235	1.31E-02 +- 2.6E-02	U J	pCi/g	93%	4.78E-02	1.00E+00	
	U-238	2.06E-01 +- 1.1E-01		pCi/g	93%	7.02E-02	1.00E+00	
2215047 SRTOT_SEP_PRECIP_GPC								
J1PX15								
MVXRE1AD	STRONTIUM	6.42E-02 +- 8.1E-02	U	pCi/g	67%	1.65E-01		
J1PX16								
MVXRF1AD	STRONTIUM	5.47E-02 +- 7.7E-02	U	pCi/g	69%	1.62E-01		
J1PX16 DUP								
MVXRF1AF	STRONTIUM	5.26E-02 +- 7.3E-02	U	pCi/g	71%	1.53E-01		3.9
J1PX17								
MVXRG1AD	STRONTIUM	9.54E-02 +- 1.1E-01	U	pCi/g	46%	2.30E-01		
J1PX18								

Date: 08-Aug-12

Sample Results Summary

TestAmerica TARL

Ordered by Method, Batch No., Client Sample ID.

8/24/12

Report No. : 52621 SDG No: JP0404

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
2215047	SRTOT_SEP_PRECIP_GPC								
	J1PX18								
	MVXRH1AD	STRONTIUM	-2.00E-02 +- 7.3E-02	U	pCi/g	67%	1.73E-01		
	J1PX19								
	MVXRL1AD	STRONTIUM	7.20E-02 +- 8.3E-02	U	pCi/g	63%	1.69E-01		
	J1PX20								
	MVXRN1AD	STRONTIUM	-4.73E-02 +- 6.8E-02	U	pCi/g	63%	1.70E-01		
2214134	7196_CR6								
	J1PX15								
	MVXRE1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	MVXRE1AF	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	3.50E-01	0.0
	J1PX16								
	MVXRF1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX17								
	MVXRG1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX18								
	MVXRH1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX19								
	MVXRL1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX20								
	MVXRN1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 35

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

August 8, 2012

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	August 1, 2012
Number of Samples	:	Six (6)
Sample Type	:	Soil
SDG Number	:	JP0404
Data Deliverable	:	7-Day / Summary

CASE NARRATIVE

I. Introduction

On August 1, 2012, six soil samples were received at TestAmerica for radiochemical and chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1PX15	MVXRE	SOIL	8/01/12
J1PX16	MVXRF	SOIL	8/01/12
J1PX17	MVXRG	SOIL	8/01/12
J1PX18	MVXRH	SOIL	8/01/12
J1PX19	MVXRL	SOIL	8/01/12
J1PX20	MVXRN	SOIL	8/01/12

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in. Nickel-63 was requested on the client chain of custody; the client contacted TestAmerica on August 2, 2012 and requested that the Nickel-63 request be canceled.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

2800 George Washington Way Richland, WA 99354 **tel** 509.375.3131 **fax** 509.375.5590 **www.testamericainc.com**

Alpha Spectroscopy
Uranium 234, 235 and 238 by method RL-ALP-015
Gas Proportional Counting
Strontium-90 by method RL-GPC-003
Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy
Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1PX15) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-003:
The LCS, batch blank, samples and sample duplicate (J1PX16) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1PX15) and sample matrix spike (J1PX15) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar
Project Manager

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-313 | Page 5 of 6

Collector: H. Weber	Company Contact: J Kessner	Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-50:8 Verification		SAF No.: RC-075
Ice Chest No.: NA	Field Logbook No.: EL-1607-14	COA: R00D502000	Method of Shipment: ~~FedEx~~ Hand Deliver 7-31-12
Shipped To: TestAmerica Incorporated, Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

Price Code: 8L — Data Turnaround: ~~21~~ 7 Days (7/30/12)

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage LV 8/1/12 JP0404

Cool 4 Deg C SDG # J1R0403

LOT # ~~J2H010457~~ J2H010457

Report: 8/8/12

SAMPLE ANALYSIS J2H010457

15

Preservation	Cool 4C	Cool 4C	None	None						
Type of Container	G/P	G/P	G/P	G/P						
No. of Container(s)	1	1	1	1						
Volume	120mL	120mL	120mL	120mL						
	(1) in Metal solutions	Chromium Hex - 7196	Nickel-63; Strontium-89,90 -- Total Sr	Isotopic Uranium						

Sample No. W 8/1/12	Matrix *	Sample Date	Sample Time									
J1PX15 MVXQF	SOIL	7/31/12	1320		X	X	X	MVXRE				
J1PX16 MVXQG	SOIL	7/31/12	1325		X	X	X	MVXRF				
J1PX17 MVXQJ	SOIL	7/31/12	1335		X	X	X	MVXRG				
J1PX18 MVXQL	SOIL	7/31/12	1340		X	X	X	MVXRH				
J1PX19 MVXQM	SOIL	7/31/12	1355		X	X	X	MVXRL				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Wickard Heather	7-31-12 1440	MStankovich	7/31/12 1410
WCH MStankovich	7/31/12 1550	10600#1 A. Freier A. Freier	7-31-12 1550
WCH A. Freier A. Freier	10600#1 8-1-12 1445	J. Book J. Book TPA	8-1-12 1445

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY LV DATE 8/1/12

JP0404

Matrix *: S=Soil; SE=Sediment; SO=Solid; SI=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-313	Page 6 of 6

Collector H. Weber	Company Contact J Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-50:8 Verification		SAF No. RC-075
Ice Chest No. NA	Field Logbook No. EL-1607-14	COA R00D502000	Method of Shipment ~~FedEx~~ AS 7-31-12 Hand Deliver
Shipped To TestAmerica Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA

Price Code 8L

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage LV 8/1/12

Cool 4 Deg C SDG # ~~JP0403~~ JP0404

LOT # J2H010452 J2H010457

Report: 8/8/12

16

Preservation	Cool 4C	Cool 4C	None	None						
Type of Container	G/P	G/P	G/P	G/P						
No. of Container(s)	1	1	1	1						
Volume	120mL	120mL	120mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	Nickel-63; Strontium-89,90 – Total Sr	Isotopic Uranium						

Sample No. LV 8/1/12	Matrix *	Sample Date	Sample Time							
J1PX20 MVXQP	SOIL	7/31/12	1235		X	X	X	MVXRM		
~~J1PX21~~	~~SOIL~~		~~1350~~ HW 7/31/12							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / H Weber	7-31-12 1410	WCH MStankovich	7/31/10 1410
WCH MStankovich	7/31/10 1550	1060 #1 A. Freier A. Freier	7-31-12 1550
WCH 1060 #1 A. Freier A. Freier	8-1-12 1445	TALR Julie Beck J. Beck	8-1-12 1445

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY LV DATE 8/1/12

JP0404

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-5018			DATA PACKAGE: JP0404		
VALIDATOR: ELR		LAB: TAL		DATE: 8/24/12	
			SDG: JP0404		

ANALYSES PERFORMED				
☐ Gross Alpha/Beta ☐ Total Uranium	☒ Strontium-90 ☐ Radium-22	☐ Technetium-99 ☐ Tritium	☐ Alpha Spectroscopy	☒ Gamma Spectroscopy

SAMPLES/MATRIX

JIPX15 JIPX16 JIPX17 JIPX18 JIPX19
JIPX20

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A
Method blank results acceptable? ..... Yes No N/A
Analytes detected in method blank? ..... Yes No N/A
Field blank(s) analyzed? ..... Yes No N/A
Field blank results acceptable? ..... Yes No N/A
Analytes detected in field blank(s)? ..... Yes No N/A
Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A
LCS/BSS recoveries acceptable? ..... Yes No N/A
LCS/BSS traceable? (Levels D,E) ..... Yes No N/A
LCS/BSS expired? (Levels D,E) ..... Yes No N/A
LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A
Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no U-235 LCS - J all

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☐ N/A

Chemical carrier added? ..... Yes No N/A
Chemical recovery acceptable? ..... Yes No N/A
Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

9. Matrix Spikes (Levels C, D, E) ..... ☐ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

10. Duplicates (Levels C, D, E) ☐ N/A

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments:

11. Field QC Samples (Levels C, D E) ☐ N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: no field QC

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? Yes No N/A

Results supported in raw data?(Levels D, E) Yes No N/A

Results Acceptable? (Levels D, E) Yes No N/A

Transcription/Calculation errors? (Levels D, E) Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Date: 08-Aug-12

QC Results Summary

TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 52621

SDG No.: JP0404

Batch / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
UISO_IE_PLATE_AEA								
2215048 BLANK QC, MVX1G1AA	U-234	2.03E-02 +- 3.1E-02	U	pCi/g	98%			5.04E-02
	U-235	-8.83E-04 +- 2.2E-02	U	pCi/g	98%			4.44E-02
	U-238	-8.83E-04 +- 2.2E-02	U	pCi/g	98%			4.44E-02
2215048 LCS, MVX1G1AC	U-234	2.89E+00 +- 6.2E-01		pCi/g	96%	91%	-0.1	4.22E-02
	U-238	3.19E+00 +- 6.7E-01		pCi/g	96%	96%	0.0	4.67E-02
SRTOT_SEP_PRECIP_GPC								
2215047 BLANK QC, MVX1F1AA	STRONTIUM	-6.16E-03 +- 5.2E-02	U	pCi/g	92%			1.23E-01
2215047 LCS, MVX1F1AC	STRONTIUM	1.03E+00 +- 3.0E-01		pCi/g	91%	92%	-0.1	1.30E-01
7196_CR6								
2214134 MATRIX SPIKE, J1PX15 MVXRE1AE	HEXCHROME	8.60E+00 +- 0.0E+00		mg/kg	N/A	85%	-0.1	1.55E-01
2214134 LCS, MVXTA1AC	HEXCHROME	1.89E+01 +- 0.0E+00		mg/kg	N/A	94%	-0.1	1.55E-01
2214134 BLANK QC, MVXTA1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 10

Date: 27 August 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Subsite 100-D-50:8
Subject: Wet Chemistry - Data Package No. JP0404-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0404 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PX15	7/31/12	Soil	C	See note 1
J1PX16	7/31/12	Soil	C	See note 1
J1PX17	7/31/12	Soil	C	See note 1
J1PX18	7/31/12	Soil	C	See note 1
J1PX19	7/31/12	Soil	C	See note 1
J1PX20	7/31/12	Soil	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less

than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package JP0404 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services.*

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP0404	REVIEWER: ELR	Project: 100-D-50:8	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Date: 08-Aug-12

Sample Results Summary

TestAmerica TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 52621

SDG No: JP0404

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
2215047	SRTOT_SEP_PRECIP_GPC								
	J1PX18 MVXRH1AD	STRONTIUM	-2.00E-02 +- 7.3E-02	U	pCi/g	67%	1.73E-01		
	J1PX19 MVXRL1AD	STRONTIUM	7.20E-02 +- 8.3E-02	U	pCi/g	63%	1.69E-01		
	J1PX20 MVXRN1AD	STRONTIUM	-4.73E-02 +- 6.8E-02	U	pCi/g	63%	1.70E-01		
2214134	7196_CR6								
	J1PX15 MVXRE1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	MVXRE1AF	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	3.50E-01	0.0
	J1PX16 MVXRF1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX17 MVXRG1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX18 MVXRH1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX19 MVXRL1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1PX20 MVXRN1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 35

8/24/12

8/24/12

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

August 8, 2012

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	August 1, 2012
Number of Samples	:	Six (6)
Sample Type	:	Soil
SDG Number	:	JP0404
Data Deliverable	:	7-Day / Summary

CASE NARRATIVE

I. Introduction

On August 1, 2012, six soil samples were received at TestAmerica for radiochemical and chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1PX15	MVXRE	SOIL	8/01/12
J1PX16	MVXRF	SOIL	8/01/12
J1PX17	MVXRG	SOIL	8/01/12
J1PX18	MVXRH	SOIL	8/01/12
J1PX19	MVXRL	SOIL	8/01/12
J1PX20	MVXRN	SOIL	8/01/12

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in. Nickel-63 was requested on the client chain of custody; the client contacted TestAmerica on August 2, 2012 and requested that the Nickel-63 request be canceled.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

2800 George Washington Way Richland, WA 99354 tel 509.375.3131 fax 509.375.5590 www.testamericainc.com

Alpha Spectroscopy
Uranium 234, 235 and 238 by method RL-ALP-015
Gas Proportional Counting
Strontium-90 by method RL-GPC-003
Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy
Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1PX15) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-003:
The LCS, batch blank, samples and sample duplicate (J1PX16) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1PX15) and sample matrix spike (J1PX15) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar
Project Manager

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-313 | Page 5 of 6

Washington Closure Hanford	**Company Contact** J Kessner	**Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH
Collector H. Weber	**Sampling Location** 100-D-50:8 Verification		**SAF No.** RC-075
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	**Field Logbook No.** EL-1607-14	**COA** R00D502000	**Method of Shipment** ~~FedEx~~ Hand Deliver 7-31-12
Ice Chest No. NA	**Offsite Property No.** NA		**Bill of Lading/Air Bill No.** NA
Shipped To TestAmerica Incorporated, Richland			

Price Code 8L **Data Turnaround** 9V 7/30/12 ~~21~~ 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage LW 8/1/12 JP0404

Cool 4 Deg C SDG # ~~JR0463~~ LOT # ~~J2H010457~~ J2H010457

Report: 8/8/12

SAMPLE ANALYSIS J2H010457

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	None	None						
				Type of Container	G/P	G/P	G/P	G/P						
				No. of Container(s)	1	1	1	1						
				Volume	120mL	120mL	120mL	120mL						
					(1) in 2 Total Fractions.	Chromium Hex - 7196	Nickel-63; Strontium-89,90 -- Total Sr	Isotopic Uranium						
J1PX15 MVXQF	SOIL	7/31/12	1320		X	X	X	MVXRE						
J1PX16 MVXQG	SOIL	7/31/12	1325		X	X	X	MVXRF						
J1PX17 MVXQJ	SOIL	7/31/12	1335		X	X	X	MVXRG						
J1PX18 MVXQL	SOIL	7/31/12	1340		X	X	X	MVXRH						
J1PX19 MVXQM	SOIL	7/31/12	1355		X	X	X	MVXRL						

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / Heather Weber	7.31.12 1440	MStankovich	7/31/12 1410
Relinquished By/Removed From WCH	Date/Time 1550	Received By/Stored In 1060 #1	Date/Time 1550
MStankovich	7/31/12	A. Freier A. Freier	7-31-12
Relinquished By/Removed From WCH	Date/Time 1060#1	Received By/Stored In	Date/Time
A. Freier A. Freier	8-1-12 1445	J. Bond J. Bond, TAIC	8.1.12 1445
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY LW DATE 8/1/12

JP0404

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

RC-075-313 | Page 6 of 6

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector H. Weber	Company Contact J Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-50:8 Verification		SAF No. RC-075
Ice Chest No. NA	Field Logbook No. EL-1607-14	COA R00D502000	Method of Shipment ~~FedEx~~ AS 7-31-12 Hand Deliver
Shipped To TestAmerica Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA

Price Code 8L

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage LV 8/1/12

Cool 4 Deg C SDG # ~~JP0403~~ JP0404

LOT # ~~J2H010452~~ J2H010457

Report: 8/8/12

14

Preservation	~~Cool 4C~~	Cool 4C	None	None	
Type of Container	~~G/P~~	G/P	G/P	G/P	
No. of Container(s)	~~1~~	1	1	1	
Volume	~~120mL~~	120mL	120mL	120mL	
SAMPLE ANALYSIS	~~See item (1) in Special Instructions.~~	Chromium Hex - 7196	Nickel-63; Strontium-89,90 — Total Sr	Isotopic Uranium	

Sample No. LV 8/1/12	Matrix *	Sample Date	Sample Time					
J1PX20 MVXQP	SOIL	7/31/12	1235		X	X	X	MVXRH
~~J1PX21~~	~~SOIL~~		~~1350~~ AS 7/31/12					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber/ [signature]	7-31-12 1410	WCH MStankard / mstankard 7/31/10	1410
WCH MStankard / MStankard	7/31/10 1550	1060 #1 A. Freier / A. Freier	7-31-12 1550
WCH 1060 #1 A. Freier / A. Freier	8-1-12 1445	TALR Julie Beck / J. Beck	8-1-12 1445

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY LV DATE 8/1/12

JP0404

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-50:4			DATA PACKAGE: JP0404		
VALIDATOR: ELR		LAB: TAL		DATE: 8/24/12	
			SDG: JP0404		

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX
JIPX15 JIPX16 JIPX17 JIPX18
JIPX19 JIPX20
Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

_____

_____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no PB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A
Spike recoveries acceptable? ..... Yes No N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No N/A
Spike standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A

Duplicate results acceptable? ..... (Yes) No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... Yes No (N/A)

Field split RPD values acceptable? ..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A

Sample holding times acceptable? ..... (Yes) No N/A

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Date: 08-Aug-12

QC Results Summary

TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 52621

SDG No.: JP0404

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
UISO_IE_PLATE_AEA								
2215048 BLANK QC, MVX1G1AA	U-234	2.03E-02 +- 3.1E-02	U	pCi/g	98%			5.04E-02
	U-235	-8.83E-04 +- 2.2E-02	U	pCi/g	98%			4.44E-02
	U-238	-8.83E-04 +- 2.2E-02	U	pCi/g	98%			4.44E-02
2215048 LCS, MVX1G1AC	U-234	2.89E+00 +- 6.2E-01		pCi/g	96%	91%	-0.1	4.22E-02
	U-238	3.19E+00 +- 6.7E-01		pCi/g	96%	96%	0.0	4.67E-02
SRTOT_SEP_PRECIP_GPC								
2215047 BLANK QC, MVX1F1AA	STRONTIUM	-6.16E-03 +- 5.2E-02	U	pCi/g	92%			1.23E-01
2215047 LCS, MVX1F1AC	STRONTIUM	1.03E+00 +- 3.0E-01		pCi/g	91%	92%	-0.1	1.30E-01
7196_CR6								
2214134 MATRIX SPIKE, J1PX15 MVXRE1AE	HEXCHROME	8.60E+00 +- 0.0E+00		mg/kg	N/A	85%	-0.1	1.55E-01
2214134 LCS, MVXTA1AC	HEXCHROME	1.89E+01 +- 0.0E+00		mg/kg	N/A	94%	-0.1	1.55E-01
2214134 BLANK QC, MVXTA1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 10

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.